

The Department of Mechanical Engineering/College of Engineering and Applied Sciences
Stony Brook University

Mechanical Engineering Seminar



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Professor

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Johns Hopkins University

Lecture Title: Processing and Mechanical Behavior of Nano Composite Thin Films

Monday, March 30, 2009, 11:00 AM, Room 301 Engineering Building

Abstract

A nanocomposite can be defined as a multiphase material with a characteristic microstructural length scale that is less than or of order 100 nm. This length scale can be, for example, the layer thickness in a multilayered material or the diameter of a second phase particle in a particle-reinforced composite. Thin film deposition methods can be used to produce a wide variety of nanocomposites in a highly controlled manner. Because of their nanoscale microstructure, nanocomposite thin films display unusual and often enhanced properties relative to bulk materials. As an example, nanocomposites can possess unique mechanical behaviors that have potential technological applications as structural materials and hard coatings. The synthesis and processing of nanocomposite thin films by novel sputtering and electrochemical deposition techniques will be presented. The mechanical behavior of these materials, as investigated using nanoindentation, internal friction, and fatigue testing methods, will also be discussed. Finally, a new method for manipulating and patterning in solution nanowires obtained electrochemically produced polymer-matrix composites will be presented.

Biography

Professor Cammarata is a Professor at Johns Hopkins University in the Materials Science and Engineering department since 1987. He chaired this department from 2003 through 2008. He received his S. B. Degree in Materials Science and Engineering from Massachusetts Institute of Technology in 1979. He received his Ph.D. degree in Applied Physics from Harvard University in 1985 and his Post-Doctoral Associate degree 1985-1987 from MIT/IBM-Yorktown Heights.

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